Implications of Anaerobic Digesters for Dairy Nutrient Management Plans

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Livestock Nutrient Management Program Water Quality Protection

- Dairies required to have and follow a Nutrient Management Plan (RCW 90.64)
- Inspections
  - review implementation of NMPs
  - identify actions to avoid water quality violations
  - include a review of nutrient balance and agronomic applications of nutrients
- No discharge to surface or ***groundwater*** (RCW 90.48)
- Program takes enforcement action for violations

Learning about digesters through the inspection process—Building a model

- Digester projects located or proposed:
  - on or around dairies (4 of 4)
  - west side of the state (3 of 4)
  - where N is already close to max needed by crops (3 of 4)
  - where P is already in excess of crop needs (4 of 4)

- Digester projects are or are proposed to be:
  - sized larger than needed to handle just manure (4 of 4)
  - with new nutrient extraction technologies research on site, but no full scale operation of these technologies (1 of 4)

Learning about digesters through the inspection process. Building a model.

- Digester projects already do or are planned to:
  - receive manure from multiple farms (3 of 4)
  - send effluent to multiple farms for application (3 of 4)
  - accept food processing waste (3 of 4)
  - require increased land base or increased exports (3 of 4)

Dairy Nutrient Management Plans

- address site, structures, and management
- cover manure applied to cropland including digester effluent
- include a whole farm balance of nutrients that incorporates animal units, imports, exports, and crop acreage
- require agronomic use of nutrients by applying nutrients where and when they are needed within the farm, using soil tests, manure tests, and records as tools
- use NRCS Nutrient Management Practice Standard 590
  - Properly use manure and organic byproducts for crops
  - Include additional monitoring for bio solids
  - Minimize applications of organic material with high salt content
  - Minimize non-point pollution

Dairy Nutrient Management Plans

- NMP updates
  - If plan is out of date for herd size or dairy has insufficient records, agronomic applications cannot be verified.
  - NMPs are supposed to be updated when any change as large as building a digester or accepting offsite imports occurs.
  - If plan results in a discharge it must be updated to address issue.

A digester requires changes to NMP

- Expected imports of food waste will need added to NMP whole farm nutrient balance.
  - quantities, nutrient content, and variability
  - More acreage or exports will likely be needed.
- Actual source, type, and quantity of imports will need recorded as received.
- Imports will need tested for nutrients.
- Imports will also need tested to rule out any substance that does not have an agronomic rate.

A digester requires changes to NMP

- Greater frequency of manure tests to address variability
- Protocols for getting nutrients spread back out appropriately to contributing farms
- Recordkeeping for exports
  - dates and volume exported
  - current nutrient test
  - provide recipient with most recent nutrient test
- Plan to also learn as you go and improve

Take home message:

- With the types of digester projects we are seeing, nutrients are a big concern.
- Assume nutrient management will be a big concern for your project too.
- ***Start planning for how to manage nutrients at the earliest stages of your project.***

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http://agr.wa.gov/FoodAnimal/Livestock-Nutrient/Livestocknutrient.htm